

## AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously presented) A microscope adapted for viewing an object positioned on a microscope slide, wherein the microscope slide is positioned within a structure, the microscope comprising:

- (a) one and only one lens having a optical axis;
- (b) a structure adapted to support the lens; the structure comprising
  - (i) a device adapted to position the microscope slide a specific distance from the lens; and
  - (ii) a device adapted to move and position the microscope slide in a plane perpendicular to the optical axis of the lens,

wherein the structure has substantially no openings between a viewer's eye and the microscope slide and at least partially encloses the microscope slide and the object being viewed when the microscope is in use in order to minimize the possibility of injury to the viewer's eye.

2. (Original) The microscope of claim 1, wherein the lens comprises an aperture optimized lens.

3. (Original) The microscope of claim 1, wherein the structure substantially encloses the object being viewed.
  4. (Original) The microscope of claim 1, wherein the structure comprises a hinged box having four sides, a top, and a bottom, wherein the top is adapted to support the lens and the bottom adapted to support the object.
  5. (Original) The microscope of claim 1, wherein the structure comprises (i) an upper portion defining an optimized aperture containing the lens and (ii) a lower portion defining a surface adapted to position the object.
- 6-13. Cancelled
14. (Previously presented) The microscope of claim 1, wherein the device adapted to move and position the microscope slide in a plane perpendicular to the optical axis of the lens comprises an object positioning device and a locking apparatus adapted to lock and hold the device in position relative to the structure.
  15. (Original) The microscope of claim 14, wherein the locking apparatus comprises a clamp adapted to at least partially restrict translational motion or

rotational motion or both of the object positioning device with respect to the structure.

16. (Original) The microscope of claim 14, wherein the locking apparatus is selected from the group consisting of magnets, wedges, screws, levers, ratchets, gears, clamps, and cams.

17. (Previously presented) The microscope of claim 14, wherein the locking apparatus comprises

- (i) a cam structure; and
- (ii) a clamp,

wherein tightening of the cam structure causes the clamp to secure the object positioning device.

18. (Original) The microscope of claim 14, wherein the strength of the lock provided by the locking apparatus is adjustable.

19. (Original) The microscope of claim 1, further comprising a plurality of apertures on the structure, wherein the apertures may be maneuvered for various viewing effects.

20. (Original) The microscope of claim 19, wherein the apertures are on a carrier that is a rotatable disk or a sliding member.
21. (Original) The microscope of claim 19, wherein the plurality of apertures comprises apertures having features selected from the group consisting of various diameters, filters, colored filters, polarizing filters, Rheinberg illumination filter and stop assemblies, dark field illumination stops, condenser lenses, illumination control elements, and any combination thereof.
22. (Original) The microscope of claim 1, further comprising an illumination controlling system.
23. (Original) The microscope of claim 22, wherein the illumination is provided by a natural light source or an artificial light source or both.
24. (Previously presented) The microscope of claim 23, wherein the light source comprises a source selected from the group consisting of sunlight, firelight, incandescent light, fluorescent light, electrically activated phosphors, photographic flash, solid-state light production devices, LEDs, transmitted light, and reflected light.

25. (Original) The microscope of claim 22, wherein the illumination controlling system comprises one or more light admitting apertures in the structure.

26. (Original) The microscope of claim 25, wherein the structure comprises

- (i) a top cover supporting the lens; and
- (ii) a bottom cover providing the one or more light admitting apertures.

27. (Original) The microscope of claim 1, further comprising a device for capturing and reproducing an image of the object being viewed.

28. (Original) The microscope of claim 27, further comprising a multiplicity of illumination angles, provided either sequentially or simultaneously, to produce stereoscopic image pairs.

29-38. Cancelled

39. (Previously presented) The microscope of claim 1, wherein the lens is selected from the group consisting of a ball lens, a glass ball lens, a double convex lens, a meniscus lens, an aspheric lens, a kino-form-corrected aspheric double convex lens, a kino-form-corrected aspheric meniscus, a flat-field apochromatic single-element simple microscope lens, a plano/spheric convex lens, a

plano/aspheric convex lens, a plano/diffractive lens, a plano/diffractive-spheric convex lens, a plano/diffractive-aspheric convex lens, a diffractive plano/spheric convex lens, a diffractive plano/aspheric convex lens, a double convex spheric/spheric lens, a double convex spheric/aspheric lens, a double convex aspheric/aspheric lens, a double convex diffractive-spheric/aspheric lens, a double convex spheric/diffractive-aspheric lens, a double convex aspheric/diffractive-aspheric lens, a double convex diffractive-aspheric/diffractive-aspheric lens, a spheric/spheric meniscus lens, a spheric/aspheric meniscus lens, an aspheric/aspheric meniscus lens, a diffractive/diffractive meniscus lens, a diffractive-spheric/spheric meniscus lens, a diffractive-spheric/diffractive-spheric meniscus lens, a diffractive-spheric/aspheric meniscus lens, a spheric/diffractive-aspheric meniscus lens, an aspheric/diffractive-aspheric meniscus lens, and a diffractive-aspheric/diffractive-aspheric meniscus lens.

40. (Original) The microscope of claim 39, wherein the lens is fabricated from a gradient refractive or diffractive index material.

41. (Previously presented) A microscope support structure, comprising:

- (a) one and only one aperture optimized lens;
- (b) a slide positioning mechanism adapted to move and position the microscope slide in a plane perpendicular to the axis of the lens; and

(c) a focusing system adapted to focus an image of an object;  
wherein the support structure defines a substantially enclosed space adapted  
to receive a slide for viewing.

42. (Original) The microscope support structure of claim 41, further  
comprising:

- (i) a top cover supporting the lens; and
- (ii) a base adapted to support a microscope slide,

wherein the top cover and the base are at least partially separable from one  
another in order to allow access to a microscope slide.

43. (Previously presented) The microscope support structure of claim 42,  
wherein the at least partial separability between the top cover and base is provided  
by a connection means selected from the group consisting of the top cover and base  
being completely removable from one another, the top cover being adapted to slide  
off the base, and the top cover and base being hinged.

44. (Previously presented) A microscope support structure comprising:  
a substantially enclosed space adapted to receive a slide for viewing, the  
microscope support structure comprising:  
one and only one lens;

a slide positioning mechanism;  
a focusing system adapted to focus an image of an object;  
a top cover supporting the lens; and  
a base adapted to support a microscope slide,

wherein the top cover and the base are hinged and wherein the top cover is separated from the base by rotation about the hinge.

45. (Original) The microscope support structure of claim 44, further comprising a coupling mechanism adapted to couple a non-hinged edge of the top cover to a non-hinged edge of the base to provide the substantially enclosed space.

46. (Original) The microscope support structure of claim 45, wherein the coupling mechanism is selected from the group consisting of a lock, a catch, a hook and lip mechanism, and finger pressure catches.

47-52. Cancelled

53. (Previously presented) A pocket-sized microscope comprising a housing supporting a single lens, the microscope having no other lens, the housing adapted to retain and enclose a microscope slide for viewing and safety, the housing adapted to substantially enclose a microscope slide, the microscope further comprising

features that position the microscope slide a specific distance from the lens and that move and position the microscope slide in a plane perpendicular to the axis of the lens.

54. (Previously presented) A single lens microscope for viewing at least one object, comprising:

(a) a structure maintaining an aperture optimized lens; and

(b) a base, comprising:

(i) a slide positioning device adapted to move and position the microscope slide in a plane perpendicular to the axis of the lens,

(ii) a focusing mechanism, and

(iii) a light receiving controller,

wherein the structure and the base are opposable and adapted to at least partially enclose the at lease one object being viewed.

55-77. Cancelled

78. (Previously presented) The microscope of claim 1, further comprising

(i) an optimized aperture defining the lens; and

(ii) a positionable slide holder;

wherein the positionable slide holder positions the object for viewing substantially parallel to the optimized aperture.

79. (Previously presented) The microscope of claim 1, wherein the lens has an optical axis; and further comprising a positionable slide holder; wherein the positionable slide holder positions the object for viewing substantially perpendicular to the optical axis of the lens.

80. (Previously presented) The microscope of claim 79, wherein the positionable slide holder comprises a slide holding portion and a slide positioning portion.

81. (Previously presented) The microscope of claim 80, wherein:
- (i) the slide holding portion is adapted to hold a slide and comprises a first magnet; and
  - (ii) the slide positioning portion comprises a second magnet on the exterior of the structure; wherein movement of the slide positioning portion causes the slide holding portion to track the movement.

82. (Previously presented) The microscope of claim 80, wherein

- (i) the slide holding portion is adapted to hold a slide and is at least partially surrounded by the structure; and
- (ii) the slide positioning portion is a handle that extends at least partially outside the structure;  
wherein movement of the slide positioning portion causes relative movement of the slide holding portion.

83. (Previously presented) The microscope of claim 80, wherein the slide holding portion has a slide gripping frame section for receiving a microscope slide.

84. (Previously presented) The microscope of claim 80, wherein the slide positioning portion comprises a handle section having a long axis adapted to provide linear translation in the direction its long axis and rotation about a fixed point.

85. (Previously presented) The microscope of claim 79, wherein the positionable slide holder comprises:

- (i) a frame having a length and a width slightly larger than a microscope slide, the length and width forming a base adapted to receive a slide,
- (ii) the frame having one or more raised edges approximating the thickness of a microscope slide,

(iii) the one or more raised edges having one or more catch surfaces adapted to engage upper surfaces of a microscope slide in order to retain the microscope slide in the positionable slide holder; and

(iv) a handle extending from the frame for manipulating the position of the frame.

86. (Previously presented) The microscope of claim 1, further comprising a focusing system adapted to focus an image of the object for a viewer by altering the spatial relation of the lens and the object being viewed with respect to one another.

87. (Previously presented) The microscope of claim 86, wherein the focusing system comprises a mechanical connection selected from the group consisting of a focus ring, a screw-jack, a scissors jack, a rack and pinion, a cam and follower mechanism, a simple lever, a compound lever, a pantographic linkage, a four-bar linkage, one or more inflatable vessels or bladders, one or more pistons and cylinders, a cable and pulley arrangement, motor driven actuators, piezoelectric actuators, inchworm drives, an electromechanical mechanism, a pneumatic mechanism, a hydraulic mechanism, a piezoelectric mechanism, and any combination thereof.

88. (Previously presented) The microscope of claim 86, wherein the focusing system comprises:

- (i) a stage adapted to display a slide, wherein the slide can be positioned on the stage without altering the position of the slide with respect to a focal plane of the lens; and
- (ii) a mechanical connection adapted to move the stage in relation to the lens.

89. (Previously presented) The microscope of claim 88, wherein the structure further comprises a tension mechanism between the stage and the mechanical connection in order to provide contact between the stage and the mechanical connection.

90. (Previously presented) The microscope of claim 89, wherein the tension mechanism provides stabilization to resist displacement of the stage in a plane substantially parallel to the focal plane of the lens.

91. (Previously presented) The microscope of claim 86, wherein the focusing system prevents contact between the lens and the object being viewed.

92. (Previously presented) The microscope of claim 86, wherein the focusing system comprises:

- (i) a focus ring to maneuver the object with respect to the lens; and
- (ii) an aperture selection device comprising a plurality of apertures

adapted to allow varying amounts of light to enter the structure.

93. (Previously presented) The microscope of claim 86, wherein the image is focused by moving the stage along the direction of the optic axis of the lens by a cam and follower mechanism.

94. (Previously presented) The microscope of claim 93, wherein the structure comprises a top cover and a bottom cover,

wherein the stage is positioned between the top cover and the bottom cover and further comprises an upper surface and a lower surface, the upper surface providing a surface for viewing and the lower surface comprising a plurality of cam follower elements,

wherein the focus mechanism is positioned between the stage and the bottom cover, and further comprises an upper surface and a lower surface, the upper surface having a plurality of ramped cam surfaces corresponding to the plurality of cam follower elements,

wherein interaction between the cam follower elements and the ramped cam surfaces allows focusing and prevents rocking of the stage.

95. (Previously presented) The microscope of claim 93, comprising three cam follower elements.

96 – 97. Cancelled.

Kindly cancel claims 98 – 101 without prejudice.

102. Cancelled.